Standing on the steps do the ordinary Swedish club and other exercises.

The other side of the apparatus is covered with a sheet of rubber and represents a hillside. Ordinary exercises practised on this slope strengthen the ankles wonderfully.

MORAINE EXERCISE.

This exercise I have devised, too, as a means of practising the loss and recovery of balance.

Procure about fourteen feet of 4 by 2 inch wood. Saw into pieces as follows :—Four pieces twelve inches long ; ten, eight inches long, and ten of four inches. Of the 12-inch pieces leave two untouched ; all the others divide diagonally. Stand the two undivided ones on their ends the length of an ice axe apart, and lay an axe on them. This gives something to jump over. Scatter the rest of the blocks on either side of the axe in different positions. Standing on the blocks on one side, jump over the axe on to those on the other. The longer blocks are fairly steady, the shorter ones ' tip up ' when one jumps on to them. The rule should be that when the balance is lost one should not touch the floor at all but should recover one's balance by stepping on to other blocks. Having recovered it, jump back again and repeat *ad lib.* The blocks represent to some extent the loose stones of a moraine. In conclusion, may I warn you against over-development of limited groups of muscles ? Such muscles are slow in action, prone to stiffness, and tend to undergo fatty degeneration.

THE BRENVA FACE OF MONT BLANC.

By J. P. FARRAR.

It may be interesting to record here all the ascents by the magnificent Brenva route, one of the greatest ice-climbs in the Alps, so far as I can trace them.

1. July 15, 1865.—F. Walker, Senr. (then aged 59), H. Walker, A. W. Moore, George Mathews. Guides—Melchior and Jakob Anderegg. Cf. ' A.J.' ii. 369 *seq.*, and ' The Alps in 1864,' 378 *seq.* (Kennedy's edition.) The account of the climb is by Mr. Moore. There are few Alpine narratives to compare to this. For accuracy of observation, topographical clearness, and general interest it is

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almost unrivalled. The party left their bivouac at 2.45 A.M., and at 7.20 A.M. reached the top of the buttress [at about 8 on illustration].* They got to the end of the famous ice arête which they crossed *à cheval* by 9.40, and then followed 2½ hrs. of step-cutting. They reached the head of the Corridor at 1.20 P.M. Thus for the ascent of the actual wall from the foot of the buttress [just below 3] they took nearly 8 hrs.

2. July 15, 1870.—W. A. B. Coolidge. Guides—Christian and Ulrich Almer and Chr. Gertsch. Cf. 'A.J.' v. 135. Durier 330. Mr. Coolidge's party left a bivouac (1 hour below Moore's) at 2.45 A.M., and reached the summit of Mont Blanc at 5.35 P.M. No account of this great expedition apparently exists beyond the short note in 'A.J.' v., but Kurz, 'Guide du Mont Blanc,' states that the party reached the main N.E. arête of Mont Blanc at the level of the Petits Mulets, although the Petits Rochers Rouges, which point is the more easily attained, may be meant. Mr. Coolidge's note in 'A.J.' v. states that 4 hrs. were required to get through the Brenva Glacier. The party was led by Almer, then in his very prime, so that the time, nearly 15 hrs. seems to indicate that the step-cutting on other parts of the route must in addition have been very severe.

3. July 14, 1881.—G. Gruber. Guides—Emile Rey and Joh v. Bergen. Herr Gruber, one of the great mountaineers of his day, hardly published anything, nor could his family after his death find any records of his numerous and brilliant expeditions. According to Kurz (French edit. 1892), p. 128, Herr Gruber ascended by a rocky spur and an arête of snow on the right (ascending) of the great couloir descending from the Col de la Brenva, and so reached the Col de la Brenva immediately at the S. foot of Mont Maudit. This was a distinct route from the others.

4. August 16, 1892.—P. Güssfeldt. Guides—Emile Rey and two others (unnamed). Cf. 'Der Mont Blanc,' 234 *seq.* Dr. Güssfeldt's account is very vivid and interesting. The unnamed guides were Laurent Croux and Michel Savoie (letter from Croux to me). They left their bivouac soon after 2 A.M., and took 3 hrs. to the foot of the buttress [below 3].* They then ascended the great couloir, taking 1 hr. 'to get through the zone in which they were threatened with annihilation from falling ice.' They reached the crest of the contrefort or buttress at about 3950 m., but just before doing this, in crossing a bergschrund the steps broke under one of the men, dragging down Dr. Güssfeldt and causing the loss of his axe. The two others fortunately stood firm. On reaching the crest of the buttress they witnessed a large avalanche sweep the route up which they had come. Then followed 2 hrs. over snow and ice-slopes, where the loss of the axe

* See p. 205.

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was much felt. At 10 some rocks about 4240 m. were reached and were followed for an hour, but they were so difficult that only about 80 m. were ascended in the hour. The rocks were then left, and now came a desperate passage through the séracs, each step taking 60 strokes. This lasted till the main arête was reached, at about 1, at about 4510 m., close to the top of the Rochers Rouges. Thus the ascent from the foot of the spur on the Brenva Glacier to the main arête took 8 hrs.

5. July 26, 1893.—J. P. Farrar. Guides—Chr. Klucker, D. Maquignaz. This ascent took from the bivouac on the rock island in the Brenva Glacier 11 hrs. 40 mins., or from the foot of the buttress 9 hrs. 40 mins. (including 1 hr. 55 mins. halts) to the main N.E. arête of Mont Blanc (10 mins. from the Rochers Rouges hut). It involved the most continuously heavy step-cutting in hard steep ice I have ever seen. The two guides were then at the zenith of their great powers. For long stretches the ice was so hard as to require thirty-five to forty axe strokes per step, and the slope was such that, forced to keep close together to prevent being struck by the chunks of ice from the step-cutting, I had to be very careful to avoid being kicked in the face as the leader moved his foot to advance. Short stretches of ice of the colour of plaster of Paris were encountered, so tough and unbrittle that the axe-head simply stuck in them without bringing anything away. I have never seen such ice elsewhere. The famous ice arête was exactly as described by Mr. Moore. From above it we traversed steep ice-slopes towards the summit with a great line of square-cut ice-cliffs above us on our left. We finally got through a rift in the ice-cliffs out on to the easy slopes below the Petits Rochers Rouges. Our route at the top was more to the left, in the direction of the summit, than is shown in the illustration in the present number. We wore no crampons in those days, but even with them the ice was such as would have certainly demanded much labour. We took from the Rochers Rouges hut to the summit 52 mins., and 18 mins. for the return, and slept there (very bad weather came on). This face is pretty certain to mean very hard work indeed for the leaders, and the others must be perfectly safe in steep ice-steps and should be able to relieve the leader of any load. No doubt the conditions may vary somewhat, but the expedition will, for the men who do the work, be always an arduous one. I understand on the authority of Laurent Croux that the séracs flanking the slopes above the famous ice arête are in some years so threatening as to preclude any ascent.

The best way is no doubt to start very early from the Col du Géant Inn and cross the Col de la Tour ronde to the foot of the rocky spur beyond the foot of Mont Maudit, where the ascent commences. In this way the séracs of the Brenva Glacier (cf. 'The Alps in 1864,' p. 386, Kennedy's

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edition, and 'A.J.' xvii. p. 539, for an account of these) can be avoided.

6. August 5, 1894.—A. F. Mummery, J. Norman Collie, G. Hastings. No guides. Cf. 'A.J.' xvii. 537 *seq.* This was the greatest of this famous party's ice-climbs in the Alps. They left their bivouac at 3.30 A.M., and were on the top of the buttress at 8. They got to the end of the ice arête at 9.50, and then followed continuous step-cutting in hard ice from 10.30 to 2.15 P.M. They attempted to reach the easy upper slopes up an ice-cliff about 60° to 75°. Up this Mummery proceeded to cut steps, but at 4 it was decided to turn back. The ice-ridge was reached in 1 hr. 25 mins., and the party finally bivouacked at the top of the buttress. Leaving their bivouac at 6 A.M. next morning they followed their steps of the previous day for a time, but instead of turning off to the left they made for a low ridge of rocks higher up. Finally after some extremely difficult ice-work they got through the séracs, and at 3.18 P.M. reached the summit of Mont Blanc. No finer exhibition of determination and skill has ever been given by any amateur party.

7. August 10–11, 1900.—Julius Kugy. Guides—Daniel and Aimé Maquignaz. Cf. D. Maquignaz's Guide Book. A short note of this expedition is to be found in 'R.M.' vol. xx. p. 59-60. My friend Dr. Kugy has kindly given me the following particulars:

August 9. Went up to the highest bivouac.

August 10. Rocks good, but otherwise everywhere hard ice with no snow covering. Tremendous step-cutting work. Weather at first good, then bad; and towards evening, as we reached the main arête, a snowstorm. Reached with difficulty the broken-down hut on the Rochers Rouges. It was full of ice. Passed the night in a corner between the ice and the floor. Had to 'powerfully handle' Daniel the whole night as he would insist on going to sleep. My right foot got frostbitten, but it got eventually better.

August 11. Weather fine; very cold. Reached summit 7 A.M. Descended to Chamonix and Montanvert.

August 12. Via Col du Géant to Courmayeur.

Dr. Kugy concludes:

'We had very bad conditions. It is certainly my greatest ice-climb. A marvellously great and beautiful memory. Whoever finds snow on this face can have no conception of how we found it.'

I cannot help being somewhat concerned at the 'powerful handling' of my unforgotten friend Daniel at the hands of his Herculean employer.

Dr. Kugy has made most of the great ascents in the Alps, and is the only man who has done the Brenva face of Mont Blanc and the Macugnaga faces of the Dufourspitze and of

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the Nordend, and no man living is a better judge of a great expedition.

8. July 9, 1901.—Signor Ettore Allegra. Guides—Laurent Croux, Alexis Brocherel. Cf. 'R.M.' 1901, 248. This party took 18 hrs. for the ascent.

9. July 29, 1904.—C. Wilson, J. H. Wicks, E. H. F. Bradby. No guides. See 'A.J.' xxv. 697, footnote. No account of this magnificent expedition has ever been published, but since writing this note Dr. Wilson has kindly let me see his Notes. The party, starting from Courmayeur the previous evening, followed the usual route to the uppermost outcrop of rocks and then proceeded to cut across the terrible ice-slope to the Col de la Brenva. They encountered hard viscous ice such as I have mentioned above, and it was only after the most severe exertions and by the exhibition of superb icemanship that they finally gained the Col at about 8.30 P.M. I was on the Mont Maudit later in the same year, and saw the great wide trough across the hard frozen surface of which they had, at the end of a 20 hours' ascent, hewn their way. The expedition deserves to rank with the best things ever done in the Alps.

10. July 10, 1906.—V. E. Ryan. Guides—Josef and Franz Lochmatter. Mr. Ryan was the first to start from the Géant Inn, and only took 9¼ hrs. from there to the summit, or about 6 hrs. for the actual climb. His party was notoriously extremely fast, and in addition this E. face is nearly certain to demand less cutting early in the season. It is much to be regretted that detailed accounts of Mr. Ryan's many brilliant expeditions have never been published.

11. July 11, 1911.—R. W. Lloyd. Guides—Josef Pollinger, Adolphe Rey. See under Various Expeditions.

12. July 28, 1911.—Allston Burr. Guides—Adolphe Rey, Joseph Taugwalder.

Mr. Burr writes to me as follows:

'I take pleasure in answering your inquiry about my Brenva route climb last summer. With Adolphe Rey, of Courmayeur, as leader, and Joseph Taugwalder, of Zermatt, on July 28 I left a camp on the rocks to the east of the Brenva glacier at 12.07 A.M., and reached the summit of Mont Blanc at 12.12 noon. We left at 12.50, and arrived at the Cabane du Dôme at 5 P.M. We did not go up by the great buttress and over the ice knife-edge, but up the snow-slopes to the north of that. Above the last rocks is a place that Mr. Moore, in his "Alps in 1864," describes as follows: "Before us was a narrow shelf of névé, stretching from the base of a perpendicular wall of ice, fifty feet high or more, to the edge of a huge crevasse."

'Rey told me that about three weeks earlier, with an Englishman, he had gone into and across this crevasse, but said it was no longer

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possible, so he cut himself up the ice-wall. I am sorry I did not time this, as it seemed long.

'The whole climb was extremely interesting.'

13. August 5, 1911.—J. C. H. Runge, W. R. Caesar. Guides—Abraham II. and Gottfried Müller. See under Various Expeditions.

14. (?) August, 1911.—John W. S. Brady. Guides—Christian Kaufmann, Alexis Croux.

No particulars have been received of the last expedition.

It is a most peculiar fact that up to last year every party encountered the greatest difficulties with ice. Last year my friends Lloyd and Runge tell me they had no continuous step-cutting in ice until quite at the end, getting through the line of ice-cliffs. In a dry season like the last, I should have expected exactly the reverse, and that the whole face would be one sheet of ice. It is tolerably certain that, generally, hard ice will be found, and he who leads or even shares in the leading up that mighty face needs no further testimony to his abilities.

THE ALPINE CLUB LIBRARY.

THE following have been added to the Library since January :

Club Publications.

Akad. Alpen-Verein Berlin. VIII. Jahresbericht 1911. 1912
9¼ × 6½ : pp. 22.
Notes of ascents in Arctic Norway, by Dr. Künne and Herr Endell.

Akadem. Alpiner Verein Innsbruck. Bericht 1905–1910. 1911
9 × 6 : pp. 85.

Akadem. Alpenverein München. XIX. Jahresbericht 1910–11. 1912
8¾ × 5¾ : pp. 86.
Among the Neue Touren are ;—
W. T. Dörpinghaus, Various first ascents in S. Morocco : *L. Distel u. andere*, Ullu-kara-Tau : *H. Pfann u. andere*, Aig. Trélatête O.-Gipfel ü. d. N.-Wand ; *H. Pfann*, Mont Blanc v. Col Emile Rey, I. führerl. Erst. ; Pta Margherita, I. führerl. Erst. ; *J. Nieberl*, Rofan ü. d. N.-Wand : *H. Pfann*, Lackenkarsp. ü. d. N.-Wand : *E. Wagner*, Vogelkarsp. ü. d. N.-Grat.

Alpen-Club Amicitia, Zürich, 21. November 1901. Statuten. Revidiert. 1907
8¾ × 5½ : pp. 16.

—— Touren-Programm pro 1912.
6½ × 4¼ : pp. 4.

C.A.F. La Montagne. Maurice Paillon Rédacteur en Chef. Vol. vii. 1911
9 × 6 : pp. xxxvi, 732 : ill.
Among other articles this volume contains ;—
H. Beraldi, Le Capitaine Durand, 1787–1835, Alpes et Pyrénées.
M. Goybet, De la Grave à Vallouise par la Brèche de la Meije et le Col d'Ecrins par les chasseurs alpins 1910.

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